

IN THE CLAIMS:

Please amend the claims as indicated below.

Please cancel claims 5-8 and 15-18, without prejudice.

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1. (Currently Amended) A method for decoding a multidimensional code, said method comprising the steps of:

compensating for intersymbol interference caused by previously decoded multidimensional code symbols; and

10 compensating for intrasymbol interference caused by symbol components within ~~the same~~ a current multidimensional code symbol.

2. (Currently Amended) The method of claim 1, wherein ~~a minimum decodable number of symbols is transmitted~~ the symbol components of one
 15 multidimensional code symbol are transmitted over more than one symbol interval associated with one of said symbol components.

3. (Currently Amended) The method of claim 1, wherein said multidimensional code ~~includes a number of trellis code dimensions~~ symbol comprises a
 20 number of transmitted symbol components that exceeds a number of available channels.

4. (Original) The method of claim 1, further comprising the steps of:
 calculating intersymbol interference estimates based on said previously decoded multidimensional code symbols;

25 calculating intrasymbol interference estimates based on possible data symbol values; and

calculating branch metrics based on a received signal and said intersymbol interference and intrasymbol interference estimates.

30 5. (Cancelled).

6. (Cancelled).

7. (Cancelled).

5 8. (Cancelled).

9. (Original) The method of claim 1, further comprising the step of determining a best surviving path into a trellis state.

10 10. (Original) The method of claim 1, wherein said multidimensional code is 4D-TCM.

11. (Withdrawn) A reduced state sequence estimation decoder for a multidimensional code, comprising:

15 at least one branch metric unit that calculates branch metrics for a received signal based on intersymbol interference and intrasymbol interference estimates, said at least one branch metric unit compensating for intrasymbol interference caused by symbol components within the same multidimensional code symbol; and

a decision feedback unit that processes survivor symbols to calculate the intersymbol interference estimates for different code states of said multidimensional code and channels used to transmit said multidimensional code.

12. (Withdrawn) The reduced state sequence estimation decoder of claim 11, wherein a minimum decodable number of symbols is transmitted over more than one symbol interval.

13. (Withdrawn) The reduced state sequence estimation decoder of claim 11, wherein said multidimensional code includes a number of trellis code dimensions that exceeds a number of available channels.

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14. (Withdrawn) The reduced state sequence estimation decoder of claim 11, wherein said at least one branch metric unit is further configured to:

calculate intrasymbol interference free estimates based on possible data symbol values; and

5 calculate branch metrics based on a received signal and said intersymbol interference and intrasymbol interference estimates.

15. (Cancelled).

10 16. (Cancelled).

17. (Cancelled).

18. (Cancelled).

15 19. (Withdrawn) The reduced state sequence estimation decoder of claim 11, further comprising an add-compare-select unit to determine a best surviving path into a trellis state.

20 20. (Withdrawn) The reduced state sequence estimation decoder of claim 11, wherein said multidimensional code is 4D-TCM.

21. (Currently Amended) A system for decoding a multidimensional code, said system comprising:

25 means for compensating for intersymbol interference caused by previously decoded multidimensional code symbols; and

means for compensating for intrasymbol interference caused by symbol components within ~~the same~~ a current multidimensional code symbol.

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Please add the following new claims:

22. (New) The method of claim 1, further comprising the step of calculating an error metric for an initial symbol component using survivor symbols from a corresponding state to account for intersymbol interference.

23. (New) The method of claim 5, further comprising the step of calculating an error metric for an subsequent symbol component using survivor symbols from a corresponding state to account for intersymbol interference and using at least one data estimate to account for intrasymbol interference.

24. (New) The method or claim 6, further comprising the step of calculating a combined metric by combining said error metric for said initial symbol component and said error metric for said subsequent symbol component.

25. (New) The method of claim 7, further comprising the step of computing a branch metric for a transition in a multidimensional trellis using said combined error metric.